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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,593	07/13/2004	Ulrich Wennemann	SMB-PT108 (PC03 001MUS)	2775
3624 7590 03/01/2007 VOLPE AND KOENIG, P.C. UNITED PLAZA, SUITE 1600 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103			EXAMINER LAMBELET, LAWRENCE EMILE	
			ART UNIT	PAPER NUMBER
			1732	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/01/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No. 10/501,593	Applicant(s) WENNEMANN, ULRICH	
	Examiner Lawrence Lambelet	Art Unit 1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thiel et al (U.S. Patent 5,910,273), and further in view of Collette et al (U.S. Patent 6,428,737).

Thiel et al '273, hereinafter "Thiel '273", teaches injection-molding a ceramic and binder composite material to form a green body for use as a dental prosthetic, as required by claim 1. See reference claims 1, 6 and 7. Thiel '273 further teaches that the binder is burned out (stripped) in a step preceding sintering. See lines 27-36 in column 2. Thiel '273 still further teaches that the green body is jacketed by another ceramic layer having different optical properties for aesthetic reasons. See lines 20-27 in column 3.

Thiel '273 does not teach that the second material is applied in a two-step molding wherein the second material is molded onto the green body, effectively coating it, as required by claims 1 and 6. Thiel '273 further does not teach a carrier part inserted into an inner cavity of a mold wherein material is injected onto the carrier part, as required by claim 9.

Collette et al, hereinafter "Collette", teaches a two-step molding operation with differing materials. See the abstract and Fig's 1 and 2. Collette further teaches that a core (carrier part) is inserted into a first cavity in a first-step molding shot. See reference number 9 in Fig's 1A and 1B.

Thiel '273 and Collette are combinable because they are concerned with a similar technical field, namely, ceramic injection molding. One of ordinary skill in the art at the time of the invention would have found it obvious to include the two-step molding process as taught by Collette in the prosthesis fabrication method of Thiel '273. The motivation to do so would have been to avoid the complication of a mechanical processing step to render a finished shape and size. See lines 50-55 in column 2 of Thiel '273.

Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thiel '273 in view of Collette as applied to claims 1, 6 and 9 above, and further in view of Daniels (U.S. Patent 3,705,025).

Thiel '273/Collette teaches the method of claims 1, 6 and 9, as discussed above.

Thiel '273/Collette does not teach sintering at low pressure relative to temperature for pore-free development of the part, as required by claim 2. Thiel '273/Collette further does not teach a grain size $< 50 \mu\text{m}$, as required by claim 5.

Daniels teaches a grain size smaller than 10 microns for a composition containing a ceramic material. See line 68-75 in column 4. Daniels further teaches a low-pressure stage of a pore-free sintering process prior to the application of maximum

temperature, wherein volatile impurities are allowed to escape before densification. See lines 60-73 in column 5.

Thiel '273/Collette and Daniels are combinable because they are concerned with a similar technical field, namely, dense ceramic structures. One of ordinary skill in the art at the time of the invention would have found it obvious to include the grain size and aspiration step taught by Daniels in the prosthesis fabrication method of Thiel '273/Collette. The motivation to do so would have been to produce a wear-resistant object. See lines 30-35 in column 2 of Daniels.

Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thiel '273 in view of Collette as applied to claims 1, 6 and 9 above, and further in view of Prasad et al (U.S. Patent 6,667,112).

Thiel '273/Collette teaches the method of claims 1, 6 and 9, as discussed above.

Thiel '273/Collette does not teach a metal carrier part, as required by claim 10, or a ceramic carrier part, as required by claim 11, or a shrink to flush with an over mold on the carrier, as required by claim 12.

Prasad et al, hereinafter "Prasad", teaches a carrier part with an underlying metal and overlying porcelain finish. See reference no's 84 and 86 in Fig. 8 and lines 34-52 in column 10. Prasad does not explicitly teach that any over mold shrinks flush to the carrier profile. One of ordinary skill in the art, however, would have found such a design consideration to be obvious in view of the intended use as a dental artifice where smoothness is critical to comfort and function.

Thiel '273/Collette and Prasad are combinable because they are concerned with a similar technical field, namely, dental restorations. One of ordinary skill in the art at the time of the invention would have found it obvious to include the carrier part taught by Prasad in the prosthesis fabrication method of Thiel '273/Collette. The motivation to do so would have been to bridge the pontic section to neighboring anchor points. See lines 34-36 in column 10 of Prasad.

Claims 3, 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thiel '273 in view of Collette as applied to claims 1, 6 and 9 above, and further in view of Hofmann et al (U.S. Patent 5,916,498).

Thiel '273/Collette teaches the method of claims 1, 6 and 9, as discussed above.

Thiel '273/Collette does not teach the melt temperatures of the ceramic components differing by less than 150° C, as required by claim 3, or the coefficients of thermal expansion differing by less than 15%, as required by claim 4.

Hoffman et al, hereinafter "Hoffman", teaches a ceramic core with a ceramic veneer having melting points less than 50° C apart. See the abstract. Hoffman further teaches that the coefficients of expansion are substantially equal to minimize internal stresses. See lines 17-25 in column 11.

Thiel '273/Collette and Hoffman are combinable because they are concerned with a similar technical field, namely, dental restorations. One of ordinary skill in the art at the time of the invention would have found it obvious to include the compatibility requirements as taught by Hoffman in the prosthesis fabrication method of Thiel

'273/Collette. The motivation to do so would have been to achieve optimum processing conditions for strength. See lines 65-68 in column 4 of Hoffman.

Thiel '273/Collette does not teach one of the components as more transparent/translucent, as required by claim 8.

Hoffman teaches that the veneer has superior translucency. See lines 17-20 in column 11.

One of ordinary skill in the art at the time of the invention would have found it obvious to include the translucency feature as taught by Hoffman in the prosthesis fabrication method of Thiel '273/Collette. The motivation to do so would have been to improve aesthetics. See lines 10-17 in column 11 of Hoffman.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thiel '273 in view of Collette as applied to claims 1, 6 and 9 above, and further in view of Thiel et al (U.S. Patent 5,591,030).

Thiel '273/Collette teaches the method of claims 1, 6 and 9, as discussed above.

Thiel '273/Collette teaches oxide-ceramic materials (insulating) for the two different compositions, as required by claim 7. See the abstract of Thiel '273.

Thiel '273/Collette does not teach a conductive ceramic composition, as also required by claim 7.

Thiel et al '030, hereinafter "Thiel '030", teaches a metal ceramic containing metal reducing agents (electrically conductive) in a dental restoration structure. See lines 9-15 in column 3.

Thiel '273/Collette and Thiel '030 are combinable because they are concerned with a similar technical field, namely, dental restorations. One of ordinary skill in the art at the time of the invention would have found it obvious to include the metallic reducing agents taught by Thiel '030 in the prosthesis fabrication method of Thiel '273/Collette. The motivation to do so would have been to secure bonding to a metal substructure, such as a carrier part. See 9-30 in column 3 of Thiel '030.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents are cited to further show the state of the art with regard to dental restorations and two-shot molding:

U.S. Patent 6,306,330 to Cerny

U.S. Patent 6,752,950 to Clarke

U.S. Patent 5,346,397 to Braiman

U.S. Patent 6,846,862 to Schofalvi et al

U.S. Patent 6,066,274 to Antonson et al

U.S. Patent Application Publication 2002/0162482 to Giordano

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Lambelet whose telephone number is 571-272-1713. The examiner can normally be reached on 8 am-4:30 pm.

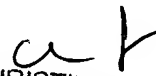
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LEL
2/18/2007


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SUPERVISORY PATENT EXAMINER
2/21/07